

Remarks

Claims 1-6, 8-14 and 16-24 are pending in the subject application. By this Amendment, Applicants have canceled claim 24 and amended claims 1, 6, 9 and 14. Support for the amendments and new claims can be found throughout the subject specification and in the claims as originally filed (see, for example, page 7, lines 20-30 of the as-filed specification). Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 1-6, 8-14 and 16-23 are currently before the Examiner. Favorable consideration of the pending claims is respectfully requested.

Applicants gratefully acknowledge the Examiner's withdrawal of the objections to the claims and the rejections under 35 U.S.C. §§ 102(b) and 112, second paragraph.

Claims 1-6, 8-14 and 16-24 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Office Action indicates that the specification does not provide support for recitation of "into which components of said substrate have been incorporated". Applicants respectfully assert that there is adequate written description in the subject specification to convey to the ordinarily skilled artisan that they had possession of the claimed invention and that the claims are enabled by the subject specification; however, in the interest of advancing prosecution in this matter Applicants have amended the claims to attend to this issue. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph, is respectfully requested.

Claims 1-6, 8-14, 16-19, and 21-23 are rejected under 35 U.S.C. § 103(a) as obvious over Lytle *et al.* (2001) in view of Banning *et al.* (2003) as evidenced by dictionary.com (www.dictionary.com). The Office Action states that Lytle *et al.* teach adhesion deficient gram-negative colonies were grown in nitriloacetic acid-free basal salt medium with ¹³C isotope as the sole carbon source. The Office Action further states that Lytle *et al.* teach that the cells were grown in a sealed tube and that the cells were grown for 20 minutes; therefore, the growth of the bacteria would have created a film of colonies on the solid support. Lytle *et al.* is further quoted as teaching detecting of palmitic acid and oleic acid. Lytle *et al.* teach that this detection method can be used to correlate biomarkers (palmitic acid and oleic acid) to in situ bioremediation or subsurface sediments

(component of bioremediation pathway). Lytle *et al.* teach that all glassware was rinsed and heated to remove contamination; however, Lytle *et al.* does not specifically teach that the stainless-steel tubing (solid support) was heated to sterilize. The Office Action states that it is *prima facie* obvious to one of skill in the art, however, to sterilize components in which bacteria is grown in order to ensure that containments of the components are not grown instead of the bacteria of study. Finally, the Office Action states that the skilled artisan would be motivated to sterilize all equipment before an experiment including the solid support in order to ensure that the experiment was detecting the bacteria of interest and to reduce the background containments. Applicants respectfully assert that the claimed invention is not obvious over the cited reference.

The Supreme Court has recently observed that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1739, 167 L.Ed.2d 705 (2007). The Court also noted, however, that [a]lthough common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* at 1741. In performing this analysis, one must also inquire as to whether “a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed invention and whether there would have been a reasonable expectation of success in doing so.” *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed.Cir.2006) (quoting 35 U.S.C. § 103(a)), cert. denied, 127 S.Ct. 2937.

In the case of this combination of references, it is respectfully submitted that one of ordinary skill in the art would not have had a reasonable expectation of success in arriving at the claimed invention. As noted in the Office Action, the Lytle *et al.* reference utilizes adhesion deficient gram-negative bacteria. As such, these organisms would not have been able to establish a biofilm on a solid support as they would be unable to adhere to the support. Since these adhesion deficient microorganisms would not have been adherent to the solid support, one would not have been able to identify biomarkers on the solid support into which isotope labeled components had been incorporated nor would one have been able to correlate the biomarkers with particular microbes or

subsets of microbial organisms at a site. Accordingly, it is respectfully submitted that a *prima facie* case of obviousness has not been established for the claimed invention and reconsideration and withdrawal of the rejection is respectfully requested.

Claims 1-6, 9-14 and 17-24 have been rejected under 35 U.S.C. § 103(a) as obvious over Elasri *et al.* (2001) in view of Banning *et al.* (2003) as evidenced by dictionary.com (www.dictionary.com). The Office Action argues that Elasri *et al.* teaches the response of a *P. aeruginosa* biofilm to stress by using a bioluminescent biosensor that responds to DNA damage. The Office Action also argues that Elasri *et al.* teach the use of a plasmid containing the lux operon that reduces flavin mononucleotides and long fatty acid aldehydes in the presence of oxygen to emit light and that the fatty acid is a biomarker that can be detected. The teachings of Banner *et al.* have been discussed *supra*.

A claimed invention is obvious “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed.Cir.2006) (quoting 35 U.S.C. § 103(a)), cert. denied, 127 S.Ct. 2937. “[O]bviousness depends on (1) the scope and content of the prior art; (2) the differences between the claimed invention and the prior art; (3) the level of ordinary skill in the art; (4) and any relevant secondary considerations, including commercial success, long felt but unresolved needs, and failure of others.” Id. (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966)). Additionally, all the claim limitations must be taught or suggested by the prior art in order to establish the *prima facie* obviousness of a claimed invention. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

In the case of this rejection, it is respectfully submitted that the combination of references fails to teach each of the limitations of the claims. For example, the Elasri *et al.* fails to teach the identifying biomarkers obtained from the microbes on said solid support into which isotopes from said substrate have been incorporated; and identifying the microbes present at said site by analyzing the biomarkers and associating isotope containing biomarkers with particular microbes or subsets of microbial organisms. Banner *et al.* and the citation to the dictionary meaning of “groundwater” fail to cure this defect in Elasri *et al.* Accordingly, it is respectfully submitted that a *prima facie* case of

obviousness has not been established and reconsideration and withdrawal of the rejection is respectfully requested.

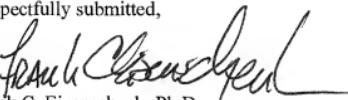
It should be understood that the amendments presented herein have been made solely to expedite prosecution of the subject application to completion and should not be construed as an indication of Applicants' agreement with or acquiescence in the Examiner's position. Applicants expressly reserve the right to pursue the invention(s) disclosed in the subject application, including any subject matter canceled or not pursued during prosecution of the subject application, in a related application.

In view of the foregoing remarks and amendments to the claims, Applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

Applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



Frank C. Eisenschenk, Ph.D.
Patent Attorney
Registration No. 45,332
Phone No.: 352-375-8100
Fax No.: 352-372-5800
Address: P.O. Box 142950
Gainesville, FL 32614-2950

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